Journal of Mobile Multimedia, Vol. 2, No.2 (2006) 146-166

LISTENING COMPREHENSION OF ENGLISH SECOND LANGUAGE WITH MOBILE DEVICES

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The use of the mobile devices in language learning has been developed at very high speed these last years. Thus, we are witnessing many research and development projects, methodologies, and scientific publications. However, the interest in research related to listening comprehension competence remains relatively low. In this paper, we propose a simple and original approach, which aims to use mobile devices for listening comprehension of foreign language especially English Second Language for French learners.

This approach is based on an easy to use technology that makes it possible for learners to work, anywhere and at their own rhythm, the listening comprehension of a foreign language. With the mobile MP3 player, the learner can carry a worth of English lessons, practicing pronunciation and conversation drills with the audio tracks. He can download from web based mobile-learning environment (named Nomad's Lang) the MP3 audio tracks and written lessons (created par teachers) and read them on any mobile device (PDA, Pocket PC or Laptops, etc.).

The paper starts with the summary of mobile devices, language skills and listening comprehension. It then highlights our approach of the use of mobile devices for learning English second language. Finally a learner evaluation is performed. The paper ends with the discussion of results and conclusion

***Key words*:** Listening Comprehension, English Second Language, Mobile Learning, Mobile Devices, Portable MP3 Player, Podcasting
Communicated by: I. Ibrahim

1 Introduction

As computers and the internet become essential educational tools, the technologies become more portable, affordable, effective and easy to use. This provides many opportunities for widening participation in and access to the internet. Mobile devices such as are much more reasonably priced than desktops, and therefore represent a less expensive method of accessing the internet

This paper describes a mobile learning project, where mobile devices are used for educational activities. The main focus of this paper is listening comprehension of foreign language (like English second language for French speakers). New approach on the use of mobile technology and how it was used in language learning, especially listening comprehension, are presented.

This approach is based on an easy to use technology that makes it possible for learners to work, anywhere and at their own rhythm, the listening comprehension of a foreign language. With the portable MP3 player, the learner can carry a worth of English lessons, practicing pronunciation and conversation drills with the audio tracks. He can download from web based mobile-learning environment the MP3 audio tracks and written lessons and read them on any mobile device.

2 Mobile Devices and Mobile Learning

2.1 Mobile Devices

A wide variety of mobile devices are available to address a broad range of applications and users. They range from very inexpensive Web-enabled devices to high-end customized tablets, with laptops, a variety of PDAs, smart and mobile phones and portable MP3 Players. Along with size differences come variations in the features and performance that these devices provide. No matter which type of mobile application you are looking to deploy, a device is available that will meet your needs.

Of all the components in a wireless solution, the mobile device gets the most attention. It is the only part of a mobile solution that the end user is in contact with. When a problem arises, some aspect of the mobile device is often held accountable. This may be the wireless connectivity, mobile operating system, input mechanisms, or performance characteristics. In any case, the application developer absolutely must be intimately familiar with the device or devices being used in order to take advantage of their unique capabilities.

Mobile devices come in all sizes with a wide range of features. Choosing the correct device involves evaluating a variety of criteria other than just cost. Two of the major factors that need to be considered are the data input mechanism and wireless connectivity options. Each of these is described in detail later in this section. Some of the other major areas that should be given special attention include the following:

Device size and weight.

Available memory for applications and data.

Processor speed: This will affect the types of applications that will be able to run on the device.

Screen characteristics such as size, color depth, indoor and outdoor suitability.

Mobile operating system support: Can it be upgraded when a new version of the operating system is released?

Expansion slots for adding peripherals such as more memory, wireless modems, GPS receivers, or digital cameras. Looking into what peripherals are available is also a good idea.

Battery life (this is a big one).

Integrated features such as digital cameras, keyboards, infrared, and Bluetooth.

Software support, including third-party applications, development tools, mobile browsers, hardware drivers, as well as others that may be applicable to your particular situation.These cover some of the major factors that should be considered, but there are bound to be others specific to the solution being implemented [26].

2.2 Mobile Learning

The term “Mobile learning” (M-learning) is used to cover a complex array of possibilities opened by the convergence of new mobile technologies, wireless infrastructure and e-learning developments.

As with any emerging paradigm, there are many attempts to define its essence. In order to do this, let's we consider the following:

1. *M-learning is the intersection of mobile computing and e-learning: accessible resources wherever you are, strong search capabilities, rich interaction, powerful support for effective learning, and performance-based assessment. E-Learning independent of location, time or space [32].*
2. *Three ways learning can be considered mobile "learning" is mobile in terms of space; it is mobile in different areas of life; it is mobile with respect of time [43].*
3. *M-learning is a development from E-learning which for its part originates from D-learning (distance education). The rapid growth of information and communication technologies (ICT) makes it possible to develop new forms of this education. Today's students' knowledge of mobile devices makes the entrance of mobile learning possible (see figure 1). [12].*

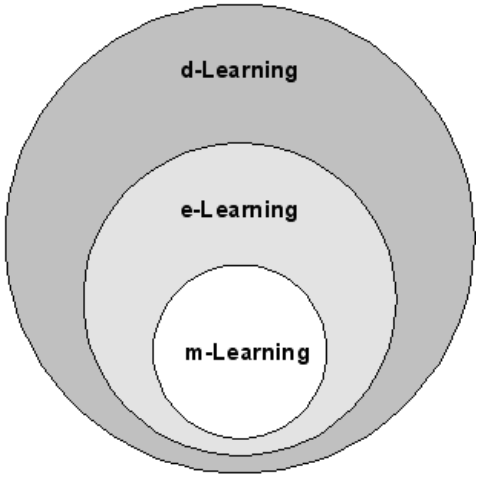

Figure 1: The place of m-Learning as part of e-Learning and d-Learning

M-learning has now emerged as a new wave of development, based on the use of mobile devices combined with wireless infrastructure, and much of the current literature on m-learning reveals all the strengths and weaknesses associated with the more mature e-learning communities. There are, of course, close links between e-learning and m-learning and it can be argued that they represent a continuum based on the deployment of ever-more sophisticated technologies.

2.3 Mobile Devices used in Mobile Learning

The main types of mobile devices used in the education process are [16]:

Laptops or Notebook computers: From one hand they have such abilities as desktop personal computer; from the other hand they have small sizes and support wireless communications. Their prices are still high [45].

Tablet PC: These are one of the newest mobile devices. They also have full range of abilities as personal computers. Some of them haven't keyboard but have software to recognize handwritten text. It is relatively expensive [7, 29, 35].

Personal Digital Assistant (PDA): They have small sizes and significant processor power. New models support more than 65000 colors, recognize handwritten text and can play different types of multimedia files. The main operating systems used are Palm and Microsoft Pocket PC [14, 19].

Mobile Phone: The low class devices mainly can be used for voice communication and sending and receiving of text messages (SMS). Some of their disadvantages are low memory capacity and low data transfer rate. The cellular phones from the higher class can be used to Internet access via WAP or GPRS technologies. They also can be used to send and receive the multimedia messages (MMS). Their prices continuously decrease [1].

Smart Phones: They are hybrid devices, which combine the abilities of mobile phones and PDA. They have smaller sizes than PDA and bigger than cellular phones. Typically they haven't full sized keyboard and can recognize handwritten text. They use Symbian, Windows Mobile or other operating system. As they have Internet browsers (Opera) they have potentiality to be successfully used in the mobile multimedia education [15].

Portable MP3 players: Today, the sales of Portable MP3 players are growing much faster than the sale of CD readers. Several design features of MP3 player seem to be particularly interesting to explore within the framework of designing learning for foreign languages learning. The actual MP3 players are connected very easily through the USB port and are very easy to operate; It is not necessary to have a computer to listen to the audio files: only the regular «reloading" of audio files requires to have access to a fixed station, Existing devices are directly usable; Even if these devices evolve regularly, the MP3 player will remain always portable, autonomous and loadable (with or without wire) [8, 2].

2.4 Communication Technologies

Today there are several communication technologies, which are used, in mobile devices. Their abilities vary vastly as well as data transmission range and range [12].

> ***Global System for Mobile Communications (GSM)*** *is one of the leading digital cellular systems. It uses narrow band TDMA (Time Division Multiple Access). Originally a European standard for digital mobile telephony, GSM has become the world's most widely used mobile system in use in over 100 countries. It provides integrated voice mail, high-speed data, fax, paging and short message services capabilities, as well as secure communications. It offers the best voice quality of any current digital wireless standard.*
>
> ***Wireless Application Protocol (WAP).*** *This is a free, unlicensed protocol for wireless communications. It makes possible creation of advanced communications services and access to Internet pages from a cellular phone. WAP is a de facto industry standard supported by a large number of suppliers. WAP devices understand the WML language (an XML application) that is optimized for small screens and navigation without a keyboard. WAP also supports WMLScript scripting language.*

General Packet Radio Service (GPRS) *is a packet-linked technology that enables high-speed wireless Internet and other data communications. GPRS provides about four times greater speed than conventional GSM systems. Currently 288 operators around the world have commercial GPRS services.*

Bluetooth Wireless Technology *is a short-range radio technology. Bluetooth makes it possible to transmit signals over short distances between telephones, computers and other devices and thereby simplify communication and synchronization between devices.*

IEEE 802.11 *is a type of radio technology used for wireless local area networks (WLANs). It is a standard that has been developed by the IEEE (Institute of Electrical and Electronic Engineers). Wi-Fi (802.11) is composed of several standards operating in different radio frequencies: 802.11b is a standard for wireless LANs operating in the 2.4 GHz spectrum with a bandwidth of 11 Mbps; 802.11a is a different standard for wireless LANs, and pertains to systems operating in the 5 GHz frequency range with a bandwidth of 54 Mbps.*

Infrared Data Association (IrDA). *This association defined a suite of protocols for infrared (IR) exchange of data between two devices, up to 1 or 2 meters apart (20 to 30 cm for low-power devices). IrDA devices typically have throughput of up to 115.2Kbps or 4Mbps. Smart phones, many PDAs, printers and laptop computers use IrDA protocols.*

The question is to know how these technologies affect the learning environment, pedagogy and continuing education [27]. According to Bryan [4], mobile technologies and their adoption by the younger generations are going to transform the education itself. It is a question "of modeling learners as creative and communicating participants, rather than passive consumers", and "to describe the world like a service on which one can read and write". The article adopts a broad definition of mobility. It is interested in continuous connectivity, the dynamic combinations of wired and wireless devices, and learners and their environment [4].

From recent work in the field of the mobile learning [6, 17, 22, 31, 40, 44], we can note the following remarks:

The reconfiguration of the classrooms and the campuses in reconfigurable open spaces, mixing physical presence and distant collaboration, seems to be one of the attractive prospects. There is no need any more to equip these spaces in a fixed way. Also we do not need to limit the learners to a specific area because they are equipped with their own communication devices, the borders are pushed to the infinity.

The continuous co-operation, independent of the place, could transform the way in which research is undertaken on the ground or the learning experiments are done. One can imagine dispersed teams that exchange and publish their results and analyses in real time.

Finally, the m-learning could become the way to follow in order to have a lifelong learning. In this approach, any person could, at any given place and time, choose a particular subject, find a learning community that is learning this topic. He/she can join this group for while and leave when his/her objectives are reached.

2.5 Benefits of mobile devices for mobile learning

Mobile devices can be used in many educational settings and accomplish many different educational tasks. Most mobile devices are useful in education both as administration, organization and teaching aids for practitioners, and also as learning support tools for students.

Devices weight and size are extremely reduced;

Learners can interact with each other and the practitioner instead of hiding behind large monitors

Much easier to accommodate several mobile devices in a classroom than several desktops, as require far less space

Shared assignments and collaborative working, so several students and the practitioner can pass the device around a group, or "beam" the work to each other using the infrared function of a PDA, or a wireless network such as Bluetooth

Can be used anywhere, anytime, including at home, on the train, in hotels - such places are conducive to learning.

Engaging learners - young people who may have lost interest in education do like mobile phones, gadgets and games devices such as Game boys

Increases motivation and personal commitment to learning if a student can "own" a device and take it with him/her wherever he/she goes, and encourages responsibility

Early results have suggested that there are positive effects on learning with handheld computers. However, much of the research is driven by the technical capabilities of new devices and application of theory to the use of these technologies for educational purposes is lacking and educational potential of mobile technologies have been sparsely explored [21, 24, 41, 42, 38]. The change from e-Learning to m-Learning will excite the change in the educational paradigm. This will require the pedagogical methods change and communication changes between teacher and students from one hand, and among students from the other hand.

3 Language Skills and Listening Comprehension

3.1 Four Basic Language Skills

In order to understand the problem being considered in this paper, it is of primary importance to know what are the capacities concerned during a learning process of a foreign language. We point out that the capacities in learning a language represent the various mental operations that have to be done by a listener, a reader, or a writer in an unconscious way, for example: to locate, discriminate or process the data. One distinguishes in the analytical diagram, basic capacities which correspond to linguistic activities and competence in communication that involve more complex capacities.

The use of a language is based on four skills. Two of these skills are from comprehension domain or what Shannon attributes to the receiver in his communication diagram. These are oral and written comprehension. The last two concern the oral and written expression (or production) or the source according to Shannon's scheme [36]. A methodology can give the priority to one or two of

these competences or it can aim at the teaching/learning of these four competences together or according to given planned program.

On one hand listening comprehension corresponds to the most frequent used competence and can be summarized in the formula "to hear and deduce a meaning". Chronologically, it is always the one that is confronted first, except in exceptional situations (people only or initially confronted with the writing, defective in hearing, study of a dead language (a language that is not in use any more), study of a language on the basis of the autodidact writing). On the other hand, the written expression paradoxically is the component in which the learner is evaluated more often. It is concerned with the most demanding phase of the learning by requiring an in depth knowledge of different capacities (spelling, grammatical, graphic, etc.)

	Oral	Written
Comprehension	Listening	Reading
Expression	Speaking	Writing

Table 1: The Four Basic Skills

3.2 Communication skill

The evolutions of linguistic and didactic fields support the introduction of new communication methodologies, which emphasize the concept of communication skill. In these methodologies the way the information is conveyed is more important than form, based on the practice of the authentic documents and open to social variations. Indeed, to communicate, it is not enough to know the language, the linguistic system; in addition one needs to know how to make use of the language according to the social context and to know rules of social use of the language.

3.3 Listening Comprehension

Listening comprehension refers to understanding the spoken language. When we speak about listening comprehension, what we really mean is listening and understanding what we hear. In our first language, we have all the skills and background knowledge we need to understand what we hear, so we probably aren't even aware of how complex a process is. Here we will briefly describe some of what is involved in learning to understand what we hear in a second language. There are two kinds of listening situations in which we find ourselves: interactive, and non-interactive.

Interactive listening situations include face-to-face conversations and telephone calls, in which we are alternately listening and speaking, and in which we have a chance to ask for clarification, repetition, or slower speech from our conversation partner. Some non-interactive listening situations are listening to the radio, TV, films, lectures, or sermons. In such situations we usually don't have the opportunity to ask for clarification, slower speech or repetition.

Richards in [33] proposes that the following are the micro-skills involved in understanding what someone says to us. The listener has to:

retain chunks of language in short-term memory,

discriminate among the distinctive sounds in the new language,

recognize stress and rhythm patterns, tone patterns, intonation contours,

recognize reduced forms of words,

distinguish word boundaries ,

recognize typical word-order patterns ,

recognize vocabulary,

detect key words, such as those identifying topics and ideas ,

guess meaning from context,

recognize grammatical word classes,

recognize basic syntactic patterns,

recognize cohesive devices,

detect sentence constituents such as subject, verb, object, prepositions, and the like.

Listening comprehension can be described in levels. Lower levels of listening comprehension would include understanding only the facts explicitly stated in a spoken passage that has very simple syntax and uncomplicated vocabulary. Advanced levels of listening comprehension would include implicit understanding and drawing inferences from spoken passages that feature more complicated syntax and more advanced vocabulary.

4 Motivations and Approach Description

English language is used in many domains of our life. A lot of people go abroad on holiday where, if they want to talk to foreigners, they have to know any foreign language at least a little. Some people go to other countries to find a job: then knowing English may be very useful and often is needful. If you want to read interesting books and magazines, which are published abroad in the foreign language, you start realize that learning the language is needed. You must also know foreign languages when you have any foreign TV channels and you want to understand something from programs or films. If you know English you can understand words of music hits you hear on TV or on the radio and which are sung in English most frequently. A lot of computer programs and games are written in English. If you know this language, you learn to use the programs more easily than someone, who doesn't know a word in English. Many firms in our country still look for people, who can work as an interpreter, an agent, a manager or a computer operator so you have better chance if you know any foreign language. Knowing Latin is very useful for doctors, pharmacists, biologists - many names of medicines, parts of our body, illnesses and species of animals are in this language. Besides, studying foreign languages may give us pleasure - some people learn them because it is their hobby, it gives them satisfaction and helps to spend their free time. In my opinion studying foreign languages is very useful, because it helps me in many domains in of life. I think that everyone should know English to talk to one another more easily. Although learning a language is often very hard, it makes our life easier in nowadays world full of computers, business, diplomacy, modern techniques and international organizations.

The use of the mobile tools in language learning has been developing at very high speed these last years. Thus, we are witnessing many research and development projects, methodologies, and scientific publications [30, 39]. However, the interest in research related to listening comprehension competence remains relatively low. Our idea is based on a study of the current situation of foreign languages oral learning. We propose a simple and original approach, which utilizes the MP3 player to enhance learners' Listening Comprehension.

4.1 Motivation

Learner's lack of oral practice of the language affects the learning process in a negative way. This phenomenon is caused by several factors, which are due to the fact that the classes are overloaded (number of learners per class is high). Also many learners are skeptic about the need of communicating in a foreign language (for example English by French speakers).

The oral learning is in a disadvantage compared to the read/written learning. This disadvantage leads us to think that the oral learning must be given more attention. It is a help that the learner can not circumvent in language learning. The social and civic dimensions must be taken into account because they play a major part in the individual learning. Indeed the oral learning has the following advantages:

It reveals phenomena that are hidden if we have only written document: intonations, accents, realization or not of certain vowels, their stamps, etc.

It gives the teacher the possibility to intervene explaining or raising questions, in order to guide the listener to know what is important and to contribute to the perception structuring and the speech recognition.

It invites the listeners to present assumptions, to interpret, to discuss, etc.

Languages' instructors note that it is very difficult to make the learners practice their oral expressions while studying a foreign language. In general very few institutions have a language laboratory that can be used by the learners to practice their oral using a computer (one or two learners per computer). But computer access remains always a problem when learners return home. How do learners study for the oral examination when they have very limited access to the tools?

Not all learners have the opportunity to access a computer and even the ones who have, usually do not have access to fast ADSL network connections to quickly download audio files and how to access the support material chosen by the instructor?

Faced with these difficulties, the idea of the approach is to equip all learners with MP3 player. Learners can have access in a "guided autonomy" to recordings chosen by the teacher so they can practice using them [23]. Practice on the audio support can be done in a traditional classroom, using a PC, in language laboratory and especially continued at home [11].

Learners can truly get their ears very well acquainted to the target English second language. They can listen to the recording as many times as they want. For the instructor, the advantage is undeniable as regards to the choice of documents in the target languages. Indeed the direct and free access to sound resources of foreign languages on the Web sites (without copyright problem), makes it possible to expose beginner and continuing learners to the authenticate language which is the first

step to being competent in comprehension. This approach seems to be very promising because it offers learners more possibilities to work on their oral expression and to be exposed to the target language.

4.1 Connectivity between server and mobiles devices

Current uses of these devices was never intended to correspond entirely to the uses envisaged by their inventors, which results [31] in speaking about diversion of use, to characterize the share of social and cultural creativity which is and will always remain in the users' hands. Our method draws its originality from the diverted use of simple mobile devices (MP3 player, PDA, Mobile Phone, etc) which was not initially created for teaching, to help increase the learner's listening comprehension of English second language.

The diffusion of the sound files (and also text files) on the Web server of the teaching platform designed for this purpose, allows the authorized public a fast remote loading of the sound documents. The platform also provides instructions on the work to be done and exercises for learners. The listening to the sound files is then done starting from the computer itself, and especially by remote loading of these files on mobile devices for listening independently of the computer.

The innovation is thus done by two successive levels of the diffusion: initially it sent from the server to the computers and others devices connected to the network (figure 2-A), and then it sent from each receiving computer to an unlimited number of mobile devices supplied locally (figure 2-B) [34].

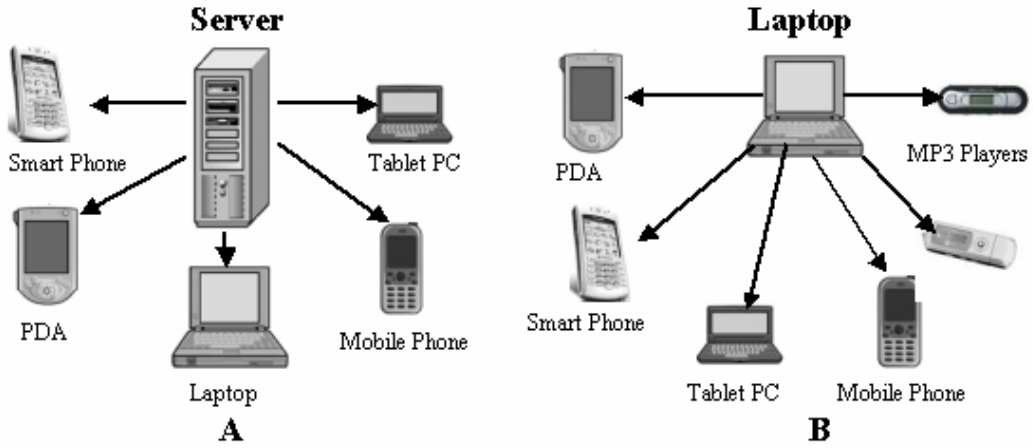

Figure 2: Sound and Text Files Diffusion

Our approach is also based on an evolutionary methodology using a pretest and post-tests where several groups of learners will be monitored in order to quantify the possible impacts and collect statistics about the use and its evolutions.

Learners are invited to answer questionnaires that have been prepared, at different stages of the learning with the goal to measure the impacts of the devices use on the learners' behavior, in particular, the performances in the language Listening Comprehension and the degree of motivation

[30]. Moreover, regular discussions make it possible to obtain users' profiles and a typology of the uses of the mobile devices.

Our approach, which is based on the combination of technologies (Information Technology, Internet and mobile devices), requires little competences in information technology. It aims on one hand, to quantify and qualify the impacts related to the use of innovating devices dedicated to foreign languages learning and on the other hand, to study the processes of adapting a specific technical device. The generalization of the devices use in other learning and/or for other types of learning seems in the short and medium term a prospect [2, 34].

4.3 Expected Objectives of the Approach

The approach proposes to the learners a new learning situation of a language as one of its main objectives. Also, it helps learners to become speakers who are able to make their idea comprehensible and to progress quickly in learning a foreign language.

It also claims to give coherence to language learning through a multiple exposure to the target language (in this case, the English Second Language for French speakers). Thus, the portable MP3 player for example is presented as a tool adapted to the achievement of these objectives since it allows learners:

To familiarize themselves with a new technological environment, a new workspace and a different learning method integrating communication and information technologies.

To diversify teaching and learning forms of the foreign language in connection with the committed reforms and within the national programs guidelines.

To propose to the learners learning situations which give them confidence and motivation. In this direction, the use of the MP3 player in language learning contributes to a positive modification of learner's attitude where a stronger participation of all concerned people is necessary [30].

To develop learners' autonomy (they have permanent access to their working group information and resources via the platform's means) and to support regular and constant personal work [23].

To modify the work practices of individual learners [36]. Specific tasks are assigned to the learners to carry out every week to support a regular practice of their oral expression.

In addition to these general objectives the following priorities are added:

To improve the learner's oral competences which are found in very heterogeneous classrooms and of rather low level.

To support the listening and comprehension work on authentic sound documents.

To allow autonomy guided work outside the classroom based on supporting materials prepared by the teacher.

To facilitate access to the sound resources via the means offered by the learning platform on the Web.

To support collaborative learning to achieve oral expression and listening comprehension in a classroom by active participation of learners.

The approach is an integral part of the general pedagogy framework which aims at making the learner as autonomous as possible and especially, very active: active in his/her trainings, active in the knowledge construction [28, 48]. We are using the MP3 player as a tool because it serves our teaching objectives and not because it is technically a powerful object [23].

5 Nomad's Lang: A Prototype Learning Environment

5.1 Consideration for Learning Nature

Foreign languages represent a special field of research for the design and development of pedagogic platforms. The linguistic and cultural contents are clearly multimode and hypermedia. The design of such platforms is necessarily multi-field, the different needed modeling (targeted domain linguistic, cognitive progression, interaction pedagogic) are relatively complex. The language teaching models tend moreover towards a personalized learning. The learning platforms have then as a task to make available for the learners a necessary digital work environment adequate for the learning and the language practice.

5.2 Software Architecture

The learning environment called "Nomad's Lang" is a web-based application with server-side processing of intensive requests. It can support a wide range of mobile devices, such as laptops, palmtops, etc. A key element of our research will be testing the new mobile tools in several different device contexts to demonstrate support for heterogeneous mobile device environments. In addition, there is the potential to integrate cellular technologies such as SMS text messaging with platform tools as an alternative mobile platform for student responses (e.g. Question/Answer, Polling, etc.).

Nomad's Lang environment provides the three principal users (teacher, learner, and administrator) a device, which has for primary functionality the availability and the remote access to pedagogical contents for language teaching, personalized learning and distance tutoring [39]. The platform allows not only the downloading of the resources made available on line (using a standard navigator) but also the diffusion in streaming of these same resources. The sound files are accompanied by textual documents introducing the subject, its contextual use, foreign speaker presentation, their phonological variation, in order to make it possible to the individual listener to locate the spoken language characteristics.

5.3 Teacher's Interface

Mobile devices are becoming more and more important in the context of e-learning. This requires appropriate models for structuring and delivering content to be used on various devices. Different technical characteristics of devices as well as different needs of learners require specific approaches. Then, we propose a model for structuring content that allows rendering for different devices as well as presentation of the content in different levels of details according to didactic concepts like case study, definition, example, interaction, motivation, and directive. This

approach allows adaptation of content (device, granularity of content, content selection based on didactic concepts) at run time to specific needs in a particular learning situation [46].

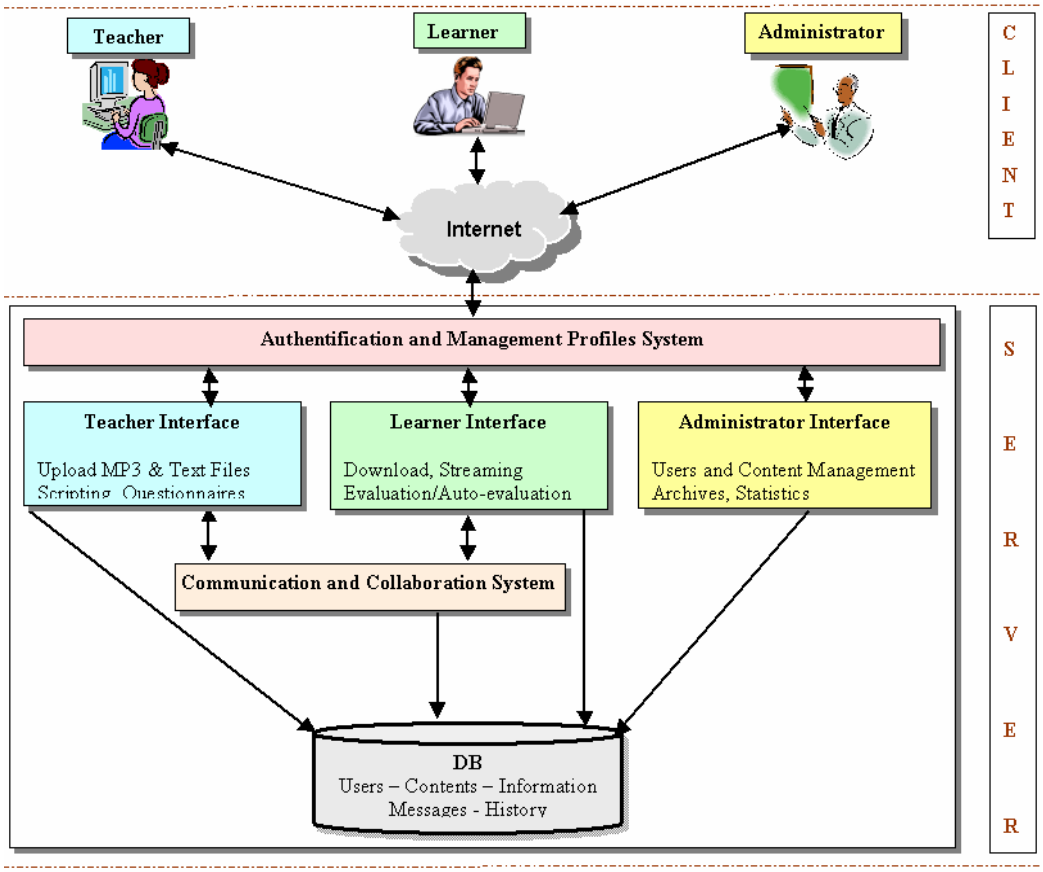

Figure 3: Basic Architecture of Nomad's *Lang* Environment

Nomad's Lang environment allows the teacher, via a dedicated interface, to make at the learners' disposal a considerable large amount of compressed digital audio and textual documents, of excellent quality to listen to. These documents are created by the teachers or recovered from Internet (using streaming or podcast technologies). The interface also makes it possible to the teacher to describe in the most complete possible way the sound files. Relative information to each file is: the name, the language, duration, public concerned, expected pedagogic objectives, the period of accessibility, the source, copyright, etc. Thus documents prepared by the teacher are loaded in the database located on the platform server.

If the learner can put his/her own techniques and strategies to understand the listening comprehension, then the instructor role consists in helping him/her to develop and enrich the learning strategies. It is thus necessary to add to the sound files with a work plan to guide the

learners on how to practice their listening within the framework of the designed learning methodology.

5.4 Learner's Interface

Learners with HTML-enabled mobile devices can enter the learning space, see published courses and take part in them via their mobile browser. Users can collaborate with other learners or teachers via discussion forums and Chat areas. Web content is dynamically adapted to the small screens.

> ***File Transfer Module*** *is used to launch the file transfer functions of the Nomad's Lang Environment. Files can be transferred to other people (and the user) from the local device or the remote server.*
>
> ***Collaboration Module*** *locates people and provides for the transfer of documents and files between people logged into the environment.*
>
> ***Course Access Interface*** *provides for updating lessons, homework, and other assignments as well as the transfer of documents between learners and teachers.*
>
> ***Communications tool*** *launches a variety of communications options including text, audio and provides for 1-to-many, many-to-1, and 1-to-1 communication.*
>
> ***Interactive Logbook*** *provides a variety of service options including history access, and editing of user profiles.*

5.5 Streaming tool

Streaming is a technique of multimedia data transfer in a regular and continuous flow (stream) via Internet based on request and in real time. Streaming technologies are widely used in transmitting large multimedia (voice, video and data) files in a fast way. With streaming, the client browser or plug-in can start displaying the multimedia data before the entire file has been transmitted.

This directly contrasts a static model of data delivery, where all the data is delivered to the client machine prior to actual use. For this whole process to work properly, the client browser must receive the data from the server and pass it to the streaming application for processing. The streaming application converts the data into sounds (or pictures). An important factor in the success of this process is the ability of the client to receive data faster than the application can display the information. Excess data is stored in a buffer - an area of memory reserved for data storage within the application. If the data is delayed in transfer between the two systems, the buffer empties and the presentation of the material will not be smooth.

The streaming server (installed at the same time as the Web server) must know how to manage the adaptation and the optimization of flow and the contents, the quality of service. The adaptation to the network and the terminal must be done in real time. Distribution networks of mobile contents are developed based on the content delivery networks model of the Internet. At the networks borders, close to the user, the multimedia servers manage part of the distribution and adaptation to the user context [37, 13].

5.6 Podcasting tool

The term podcast combines the words iPod and broadcasting and gives name to a novel method of publishing audio broadcasts over the Internet using RSS syndication for listening on mobile devices and personal computers. A podcast is a web feed of audio or video files placed on the Internet for anyone to subscribe to, and also the content of that feed. Podcasters' websites also may offer direct download of their files, but the subscription feed of automatically delivered new content is what distinguishes a podcast from a simple download or real-time streaming. Podcasting's essence is about creating content (audio or video) for an audience that wants to listen when they want, where they want, and how they want.

Subscribing to podcast tool, within Nomad's Lang Environment, allows a learner to collect programs from a variety of MP3 sources for listening offline at whatever time and place is convenient. In contrast, traditional broadcasting provides only one source at a time, and the time is broadcaster-specified. While podcasts are gaining ground on personal sites and blogs, they're not yet widespread. In addition, users can view the descriptions of that item while it plays [20]. The simple interface allows the user to easily scroll through the page. The learner will improve his English by listening to native speakers talk and discuss topics of interest to him. He will learn new idioms and expressions and learn to use them the way native speakers do. Each ESL Podcast lasts 10-20 minutes, and has three parts:

1. *A dialog or story read a bit slower than normal speech.*
2. *An explanation of some of the expressions and phrases used in Part 1.*
3. *A repetition of the dialog or story at a native rate of speech.*

The podcasts are all recorded at a speed the learner can understand—clearly and comprehensibly. This way, he will be able to actually understand the English his hear, and pick up the meanings of new words and phrases.

The Interactive Logbook

The goal of the logbook is to set up an automatic book keeping information related to the learner's activity while he/she carries out a scenario on a teaching object (date and duration of each connection, MP3 files downloaded or listened to in streaming, exercises for self evaluation, etc). This requires an effort of information structuring and an implementation within the platform. An exploitation of this information by learners can guide them through their training plan.

The metaphor of the Interactive Logbook was conceived from the very traditional personal learning environment – a logbook, kept by students to record lectures, laboratories, project notes and more besides. Although in many subjects, especially in the science disciplines, logbooks are still an integral part of courses, they are not well used by students. Since many learning activities are taking place digitally: writing essays, analyzing data, browsing the web, online discussions - it doesn't make sense to print or copy out the output for a paper based logbook. Although the interactive logbook extends to network capability and digital search, the name 'logbook' gives an impression of the flexibility and purpose of the tool.

The Interactive Logbook seeks to provide a place in which personal information can be stored completely, privately and for all time. By being integrated with the environment in which much of the learner's activity takes place, physical time and effort barriers can also be reduced, made even lower by automated logging of basic documents and events (emails, documents, diary entries,…) [18]. Finally, a statistical analysis of logbooks of a group of learners that have done the same activity would give a synthetic vision of the group's learning, and would be useful to all people involved in the learning.

6 Communication and Collaboration using Mobile Devices

6.1 Group Communication

In Nomad's Lang, learners have to find the same classical environment as they have in real life. In this environment students can ask for all questions whenever they need and they discuss a lot together of interesting or pointless subjects.

The environment also support group communications by offering discussions, forums and shared workspaces where students can exchange documents using podcating tool. We distinguish between asynchronous and synchronous communication facilities. Social contacts are a crucial point in learning situations. Students should therefore be able to present themselves in a personal homepage with a photograph, a list of hobbies and other personal aspects. Such personal presentations are not toys, but they can help the students to get into contact even more easily than in live classroom situations. There is a great potential in using mobile terminals for communication services.

Whereas the PC has been developed first for accessing and sharing information and hence been used most for individual learning with limited human communication. Mobile technology has been developed specifically for human communication. As communication is regarded an important element in every kind of learning, the use of mobile technology may therefore prove to represent a potential for new kinds of integration between information sharing and human communication which may improve the learning outcome of flexible learning

6.2 Communication and Learning scenarios

The communication and collaboration system launches a variety of communications options including text, audio, video, and whiteboard and provides for 1-to-many, many-to-1, and 1-to-1 communication. It provides a powerful architecture for the development of new educational tools to enhance different modes of teaching and learning. It is ideally suited to mobile learning and able to integrate tools developed explicitly for mobile contexts. The opportunity is to leverage the platform to develop innovative tools for mobile learning that are applicable to (1) synchronous formal learning (e.g., classrooms) and (2) asynchronous informal learning (eg, discussion in the cafeteria).

6.3 Synchronous Formal Learning

There are a number of learning activities in formal educational environments (such as teacher-led classroom scenarios), which are ideally suited to mobile learning tools. Synchronous learning

activities such as polling/voting and question and answer (where the system immediately collates all responses and presents an aggregate view of votes or answers to all students) are ideal for pedagogically rich mobile learning. Features which are unique to the system and which would enhance this mobile learning include:

> *the ability to easily sequence activities into re-usable lesson plans (using a simple visual "drag and drop" lesson planner);*
>
> *recording of student responses for later review by students/teachers; and the option for teachers to create Question & Answer activities with either anonymous or identified answers from students (which provides a basis for more honest answers due to the lack of peer pressure).*

6.4 Asynchronous Informal Learning

Informal learning scenarios (such as student discussion in a cafeteria) provide environments where mobile devices can support flexible, "on the fly" learning opportunities. Valuable learning activities in these contexts could be supported by a content/URL sharing tool, and discussion forums and live chat/instant messaging for questions and responses to other learners or the teacher. Again, Nomad's Lang provides unique features to support these activities by providing an environment to manage and deliver these tools in the context of asynchronous (and synchronous) informal learning, including recording of activities for later student/teacher review, and creation of re-usable lesson plans (based around informal student learning using flexible toolsets).

6.5 Evaluation of Listening Comprehension

Listening comprehension has come to be recognized as an active rather than a passive skill and its importance acknowledged in the acquisition of language. With the emergence of multimedia as teaching tools, it is being given renewed attention. Starting from supports authentic listening, the evaluation of listening comprehension aims to check, the effective location of a certain number of information, their relations and, if necessary their interpretation. Lessons focused on listening will be enhanced by incorporating the following guiding principles [3].

> *Materials should be authentic. Using authentic materials is a good way to develop listening strategies. Predicting, asking for clarification, using non-verbal cues are examples of strategies that increase chances for successful listening. It also gives them a chance to check for accuracy in hearing sounds, intonation, words, and grammatical structures.*
>
> *The language should reflect real discourse, including hesitations, rephrasing, and a variety of accents.*
>
> *Language needs to be comprehensible, but it does not need to be constantly modified or simplified to make it easier for the listener.*

To verify if comprehension is reached, the learners are invited to answer to short instructions written in English, without required that they write them in the sentences forms and without taking into account the grammatical and/or orthographical mistakes.

The tasks of comprehension credited on the marks-scale, which appears on the specific grid, provide for each support and are distributed to the learners.

The Multi-Choice Question type and true/false type exercises are deliberately avoided. The exercises of this type do not concern a summative evaluation, but belong to the training fields that facilitate the comprehension task. It's the same reason that motivates the not fragmented listening constraint.

One of the main goals in our research work is to explore what are the best mobile learning practices and activities that can help and support the learning to become a more meaningful process. Another goal is to explore from a pedagogical perspective innovative future learning practices, which are related to mobility and the new forms of studying [5, 10].

7 Conclusion

We presented in this paper an original approach for listening comprehension of an English second language by using devices whose initial function was for different purposes. For example, the portable MP3 player as a nomad object with its characteristics of portability, accessibility, and autonomy is similar to a book.

The approach proposes an innovation, which is done on two successive levels. On one hand, the diffusion or provision of sound resources prepared by the teachers on the distance teaching platform and on the other hand, the use of the MP3 player to expose sufficiently to a quality authentic language.

In prospect, the approach aims at developing in the learners other oral competence, namely the oral expression, so that they can express themselves in foreign language. The mastering of the language goes through the mastering of elocution. The approach thus envisages giving the learners the opportunity to produce audio files, as a result of their work, by using the "recording" function of the MP3 player. Concrete situations of uninterrupted speech, to give a summary of a lecture, oral comments about documents studied in class, exercises to argument or justify a point of view, facilitate the use and adaptation of the target language [15]. We have started experimenting with the use of the environment in real teaching/learning situation. This experimentation allows us to collect information on the effective activities of the users. We can thus validate or question certain technical choices and determine with more precision the adaptations that have to be made to the integrated tools Feedback from a panel was very positive and the mobile aspect of environment was seen as a novel and interesting approach as a research tool. A detailed evaluation of the effectiveness of the learning environment has yet to be completed [47].

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